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Santa Clara Valley Water District

Qualserve Performance Indicators
Water and Wastewater Utilities Pilot Survey
Final Report
February 2003

prepared by

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Introduction

The primary objective of this initiative is to assess the performance of water and wastewater utilities using a variety of high-level measures. These measures are designed to help participating organizations improve their operational efficiency and effectiveness. Utility managers will use this information to determine where his/her utility's performance resides within the industry peer group. Twenty-two high-level indicators were selected as the starting point for the system because they are more likely to be recognizable and applicable at large numbers of utilities. Please note this initiative represents a pilot project to develop suitable performance indicators for water and wastewater utilities. Next steps beyond this pilot depend on the levels of interest by survey participants.

This initiative represents the result of the efforts of various organizations and individuals. AWWA/WEF/AWWARF staff brought together representatives from various organizations to develop performance indicators. During two workshops, these individuals set out to build on what others have already researched, developed and communicated, and to do it in a way that might draw continuing support from utilities that will both provide and use performance indicator data. A narrower project scope was proposed as a start so participating utilities will have opportunities to decide which indicators have the most meaning to them, and those administering the proposed measurement system can learn how to build, finance, manage and sustain an effective data delivery system. Developing a more detailed measurement system is planned in for future periods, including the addition of lower-level indicators. Twenty-two performance indicators were selected for this project. The QualServe business systems were chosen as an organizing framework to guide the design effort so the initial performance indicators database would be familiar to the many utilities participating in other elements of that program.

Definitions

Definitions

Values were derived from answers provided in the Qualserve Performance Indicators for Water and Wastewater online survey.

Participant Groups:
1) Water Operations - represent those utilities designated as exclusively providing water services.
2) Wastewater Operations - represent those utilities designated as exclusively providing wastewater services.
3) Combined Operations - represent those utilities designated as providing both water and wastewater services.

Percentile: Values below which certain percentages of responses fall. For example, the 75th percentile is the value below which 75 percent of the responses fall.

Median: Represents the 50th percentile.

A designation of "na" reflects data was not available or applicable for that metric.

All metric definitions, calculations, and purpose statements originate from the Qualserve Performance Indicators Report.

Participants

Thirty-five utilities participated. Nine water, six wastewater, and 20 combined operations utilities submitted data.

Water Operations
- Aquarion Water Company of Connecticut
- Jordan Valley Water Conservancy District
- Louisville Water Company
- North Penn Water Authority
- Onondaga County Water Authority (OCWA)
- Riverside Public Utilities Department (City of)
- Saint Paul Regional Water Services
- Santa Clara Valley Water District
- Tucson Water

Wastewater Operations
- Delta Diablo Sanitation District
- Fairfax County Office of Waste Management
- Hampton Roads Sanitation District
- Los Angeles (City of), Bureau of Sanitation
- Louisville-Jefferson County Metropolitan Sewer District
- Portland, Bureau of Sanitation (City of)

Combined Operations (Water and Wastewater)
- Beaufort-Jasper Water & Sewer Auth.
- Charlotte-Mecklenburg Utilities
- City Light and Water
- Columbus Water Works
- Commissioners of Public Works
- East Bay Municipal Utility District
- Indianapolis Water Company
- JEA
- Kissimmee, Dept. of Water Resources (City of)
- Lower Colorado River Authority
- Martin County Environmental Services
- Moscow Water Department (City of)
- Mount Pleasant Waterworks
- Naperville Department of Public Utilities (City of)
- Olathe (City of) Utility Center
- Phoenix Water Services Department (City of)
- Portland Water District
- Salt Lake City Water Department
- Seattle Public Utilities
- Winnipeg Water and Waste Department (City of)

Qualserve Performance Indicators for Water and Wastewater Utilities Pilot Survey
Performance Indicators Summary

		Water Operations			Wastewater Operations			Combined Operations		
	Santa Clara Valley Water District	25th Percentile	Median	75th Percentile	25th Percentile	Median	75th Percentile	25th Percentile	Median	75th Percentile
Organizational Development										
Organizational Best Practices Index	25.0	21.0	25.0	27.0	22.8	24.5	28.0	20.0	22.5	25.3
Employee Health and Safety Severity Rate	0.3	21.4	33.6	59.7	12.7	127.9	307.9	18.6	78.3	272.9
Training Hours per Employee	27.8	15.7	27.2	32.9	21.4	37.4	44.0	6.8	23.5	42.8
Customer Accounts per Employee (Water)	0	216	419	643	na	na	na	336	512	656
Customer Accounts per Employee (Wastewater)	.	na	na	na	401	644	775	364	492	707
MGD Water Delivered per Employee	0.31	0.21	0.31	0.46	na	na	na	0.15	0.22	0.43
MGD Wastewater Processed per Employee	.	na	na	na	0.21	0.26	0.31	0.16	0.28	0.33
Customer Relations										
Customer Service Complaints per 1000 Customers	0.0	6.9	36.1	45.9	0.2	58.9	287.2	7.2	69.1	106.4
Technical Quality Complaints per 1000 Customers	0.0	0.7	3.9	8.2	0.3	4.2	118.1	1.7	12.8	78.8
Disruptions of Water Service Rate										
Planned (less than 4 hours)	0.00	0.41	0.51	1.19	na	na	na	0.10	0.40	2.73
Planned (between 4 and 12 hours)	250.00	0.00	0.21	0.84	na	na	na	0.09	0.22	0.88
Planned (greater than 12 hours)	125.00	0.00	0.00	0.91	na	na	na	0.00	0.00	0.00
Unplanned (less than 4 hours)	250.00	0.20	1.12	4.34	na	na	na	0.39	1.27	4.36
Unplanned (between 4 and 12 hours)	0.00	0.00	0.07	1.07	na	na	na	0.08	0.44	0.56
Unplanned (greater than 12 hours)	0.00	0.00	0.00	0.08	na	na	na	0.00	0.00	0.25
Residential Cost of Water and/or Sewer Service										
Monthly residential water using 7500 Gs per mth	.	$10.49	$15.61	$25.13	na	na	na	$15.47	$21.89	$24.99
Avg. residential water bill amount for one month of service	.	$13.15	$20.45	$33.10	na	na	na	$13.47	$16.60	$22.75
Monthly residential sewer using 7500 Gs per mth	.	na	na	na	$16.47	$22.13	$38.46	$16.18	$21.60	$35.00
Avg. residential sewer bill amount for one month of service	.	na	na	na	$14.26	$17.50	$24.20	$14.41	$19.84	$27.00
Multi-service, monthly bill - combined svc. using 7500 Gs per mt	.	na	na	na	na	na	na	$26.10	$29.89	$33.67
Multi-service, avg. residential combined bill for one month of se	.	na	na	na	na	na	na	$26.10	$31.38	$36.65
Customer Service Cost per Account	.	$17.80	$27.75	$35.70	$5.33	$11.92	$22.27	$13.68	$26.70	$32.71
Billing Accuracy	.	13.4	22.6	60.2	17.0	62.2	74.2	14.3	61.6	107.6

Qualserve Performance Indicators for Water and Wastewater Utilities Pilot Survey
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		Water Operations			Wastewater Operations			Combined Operations		
	Santa Clara Valley Water District	25th Percentile	Median	75th Percentile	25th Percentile	Median	75th Percentile	25th Percentile	Median	75th Percentile
Business Operations										
Debt Ratio	0.2	0.2	0.3	0.5	0.3	0.4	0.6	0.2	0.4	0.6
System Renewal / Replacement Rate										
Water pipeline	0.3%	0.3%	5.3%	10.7%	na	na	na	0.8%	1.3%	32.6%
Water treatment facility and pipeline	0.4%	1.2%	2.3%	6.8%	na	na	na	0.6%	1.5%	13.6%
Wastewater pipelines and collections	.	na	na	na	1.6%	2.2%	6.5%	0.7%	3.0%	25.5%
Wastewater treatment facility and pumping	.	na	na	na	1.2%	3.8%	7.4%	0.9%	3.1%	14.0%
Return on Assets	6.0%	2.0%	4.4%	5.9%	0.5%	1.2%	3.4%	0.5%	1.9%	4.8%
Water Operations										
Drinking Water Compliance Rate	100.0%	100.0%	100.0%	100.0%	na	na	na	100.0%	100.0%	100.0%
Distribution System Water Loss	0.3%	0.7%	11.5%	16.7%	na	na	na	8.3%	9.4%	12.3%
Water Distribution System Integrity	.	20.4	40.3	87.2	na	na	na	19.9	83.6	139.8
Operations & Maintenance Cost Ratios										
O&M Cost per Account	.	$166	$244	$322	na	na	na	$126	$211	$317
O&M Cost per MG Processed	$2,002	$864	$944	$1,466	na	na	na	$866	$1,096	$2,221
Direct Cost of Treatment per MG	.	$294	$470	$1,205	na	na	na	$295	$667	$1,565
Planned Maintenance Ratios										
Planned Maintenance Ratio in Percent (Hours)	61.9%	42.0%	61.9%	77.7%	na	na	na	32.1%	49.6%	66.5%
Planned Maintenance Ratio in Percent (Cost)	$0.42	$0.41	$0.46	$0.76	na	na	na	$0.21	$0.36	$0.82

Qualserve Performance Indicators for Water and Wastewater Utilities Pilot Survey
Performance Indicators Summary

		Water Operations			Wastewater Operations			Combined Operations		
	Santa Clara Valley Water District	25th Percentile	Median	75th Percentile	25th Percentile	Median	75th Percentile	25th Percentile	Median	75th Percentile
Wastewater Operations										
Sewer Overflow Rate	.	na	na	na	2.3	5.3	9.1	1.7	3.8	8.2
Collection System Integrity	.	na	na	na	0.4	3.6	31.9	1.6	5.0	10.8
Wastewater Treatment Effectiveness Rate	.	na	na	na	0.9	1.0	1.0	0.8	1.0	1.0
Operations & Maintenance Cost Ratios										
O&M Cost per Account	.	na	na	na	$215	$286	$417	$152	$174	$356
O&M Cost per MG Processed	$380	na	na	na	$1,603	$2,363	$27,069	$987	$1,359	$3,658
Direct Cost of Treatment per MG	.	na	na	na	$543	$1,053	$9,905	$653	$1,141	$1,850
Planned Maintenance Ratios										
Planned Maintenance Ratio in Percent (Hours)	.	na	na	na	14.2%	39.4%	46.3%	47.5%	57.3%	75.4%
Planned Maintenance Ratio in Percent (Cost)	.	na	na	na	$0.09	$0.22	$0.46	$0.26	$0.60	$0.77

Organizational Best Practices Index

Purpose:
To summarize a utility's implementation of management programs important to water and wastewater utilities.

The practices are the following:
Strategic Planning
Long-term Financial Planning
Risk Management Planning
Optimized Asset Management
Performance Measurement
Customer Involvement
Continuous Improvement

The scoring system is:
· This activity is fully implemented at our utility (5 Points)
· This activity is largely implemented, but there is room for improvement (4 Points)
· This activity is implemented, but there is room for substantial improvement (3 Points)
· This activity is implemented, but only occasionally or without uniformity (2 Points)
· This activity is not practiced at our utility (1 Point)
With seven practices each scoring between 1 and 5, the aggregate score at each utility will range between 7 and 35.

Detailed information for each of the seven pras can be found in the glossary of survey terms.

		Water Operations			Wastewater Operations			Combined Operations		
	Santa Clara Valley Water District	25th Percentile	Median	75th Percentile	25th Percentile	Median	75th Percentile	25th Percentile	Median	75th Percentile
Organizational Best Practices Index	25.0	21.0	25.0	27.0	22.8	24.5	28.0	20.0	22.5	25.3

Sample Size	
Water Operations	9
Wastewater Operations	6
Combined Operations	18

Employee Health and Safety Severity Rate

Purpose:
To quantify the rate of employee days lost from work due to illness or injury.

Calculation:
Employee Health and Safety Severity Rate = 200,000 (Total Days Away from Work) / Total hours worked by all employees

Definitions:
· Total workdays away from work are obtained directly from OSHA Form 300A (or state counterpart) Summary of Work-Related Injuries and Illnesses.
· Total hours worked by all employees is the sum of hours actually worked by full-time, part-time, temporary and seasonal employees of the utility.

Visit www.osha.gov for a complete explanation of this indicator, including applicable definitions.

		Water Operations			Wastewater Operations			Combined Operations		
	Santa Clara Valley Water District	25th Percentile	Median	75th Percentile	25th Percentile	Median	75th Percentile	25th Percentile	Median	75th Percentile
Employee Health and Safety Severity Rate	0.3	21.4	33.6	59.7	12.7	127.9	307.9	18.6	78.3	272.9

Sample Size	
Water Operations	9
Wastewater Operations	5
Combined Operations	18

Training Hours per Employee

Purpose:
To measure the quantity of formal training utility employees are actually completing. This indicator is expressed as the number of formal training hours per employee per year.

Calculation:
Training Hours per Employee = Total of qualified formal training hours for all employees / Total FTEs worked by employees during the reporting period

Definitions:
· Sum of all qualified formal training hours completed by all employees
· Total hours worked by all employees is the sum of hours actually worked by full-time, part-time, temporary and seasonal employees of the utility.

		Water Operations			Wastewater Operations			Combined Operations		
	Santa Clara Valley Water District	25th Percentile	Median	75th Percentile	25th Percentile	Median	75th Percentile	25th Percentile	Median	75th Percentile
Training Hours per Employee	27.8	15.7	27.2	32.9	21.4	37.4	44.0	6.8	23.5	42.8

Sample Size	
Water Operations	9
Wastewater Operations	5
Combined Operations	16

Customer Accounts per Employee (Water and Wastewater)

Purpose:
This indicator is intended to measure employee efficiency.

Calculation:
Customer accounts per employee = Number of accounts / Number of full time equivalents

Definitions:
· Active Customer Account means all customer accounts that were active for some or all of the reporting period. A single account may include service through more than one water or sewer service connection.
· A full-time equivalent (FTE) is the allocation of employee time equal to 2080 hours per year. Use of this term allows data to be normalized around a common measure. Part-time, temporary, and seasonal employees are converted to FTEs based on the total number of compensated hours. Employee time from contracts supporting utility operations and maintenance are applied in the same way. Employee time from engineering and construction of new facilities are not counted in these indicators.

		Water Operations			Wastewater Operations			Combined Operations		
	Santa Clara Valley Water District	25th Percentile	Median	75th Percentile	25th Percentile	Median	75th Percentile	25th Percentile	Median	75th Percentile
Customer Accounts per Employee (Water)	0	216	419	643	na	na	na	336	512	656
Customer Accts per Employee (Wastewater)	.	na	na	na	401	644	775	364	492	707

Sample Size (maximum)	
Water Operations	9
Wastewater Operations	6
Combined Operations	18

MGD Water Delivered per Employee

Purpose:
This indicator is intended to measure employee efficiency.

Calculation:
MGD processed per employee = Average MGD delivered / Number of full time equivalents

Definitions:
· Average daily volumes distributed are calculated by dividing the total volume of water distributed during the reporting period by 365.
· A full-time equivalent (FTE) is the allocation of employee time equal to 2080 hours per year. Use of this term allows data to be normalized around a common measure. Part-time, temporary, and seasonal employees are converted to FTEs based on the total number of compensated hours. Employee time from contracts supporting utility operations and maintenance are applied in the same way. Employee time from engineering and construction of new facilities are not counted in these indicators.

		Water Operations			Wastewater Operations			Combined Operations		
	Santa Clara Valley Water District	25th Percentile	Median	75th Percentile	25th Percentile	Median	75th Percentile	25th Percentile	Median	75th Percentile
MGD Water Delivered per Employee	0.31	0.21	0.31	0.46	na	na	na	0.15	0.22	0.43

Sample Size	
Water Operations	9
Wastewater Operations	0
Combined Operations	18

MGD Wastewater Processed per Employee

Purpose:
This indicator is intended to measure employee efficiency.

Calculation:
MGD processed per employee = Average MGD processed / Number of full time equivalents

Definitions:
· Average daily volumes processed are calculated by dividing the total volume of wastewater processed during the reporting period by 365.
· A full-time equivalent (FTE) is the allocation of employee time equal to 2080 hours per year. Use of this term allows data to be normalized around a common measure. Part-time, temporary, and seasonal employees are converted to FTEs based on the total number of compensated hours. Employee time from contracts supporting utility operations and maintenance are applied in the same way. Employee time from engineering and construction of new facilities are not counted in these indicators.

		Water Operations			Wastewater Operations			Combined Operations		
	Santa Clara Valley Water District	25th Percentile	Median	75th Percentile	25th Percentile	Median	75th Percentile	25th Percentile	Median	75th Percentile
MGD Wastewater Processed per Employee	.	na	na	na	0.21	0.26	0.31	0.16	0.28	0.33

Sample Size	
Water Operations	0
Wastewater Operations	6
Combined Operations	18

Customer Service Complaints per 1000 Customers

Purpose:
This indicator measures the complaint rates experienced by the utility, with individual quantification of those related to customer service and those related to core utility services. It is expressed as complaints per 1000 customer accounts.

Calculation:
Customer Service Complaint Rate = (1000) # customer service associated complaints # of active customer accounts

Definitions:
· Active Customer Account means all customer accounts of all classes that were active for some or all of the reporting period. A single account may include service through more than one water or sewer service connection.
· A complaint is an expression of dissatisfaction conveyed to a utility employee acting in his/her official capacity and deemed valid by utility, whether or not action is taken to resolve it. Complaints may be communicated orally or in writing.
· Customer refers to an individual service agreement for water or sewer service at a single property, regardless of size or billing category. An individual may own more than one property and be counted as a customer more than once.
· Customer service, in the context of these indicators, refers to relationship factors such as personal appearance, courteousness, helpfulness, professionalism, responsiveness, adherence to traffic laws while driving a vehicle, and timeliness. Also refers to customer support services such as turn-on/turn-off, billing, rate-setting, and communication. All utility employees should have assigned responsibility for good customer service, thereby helping the utility build a positive image within the community.

		Water Operations			Wastewater Operations			Combined Operations		
	Santa Clara Valley Water District	25th Percentile	Median	75th Percentile	25th Percentile	Median	75th Percentile	25th Percentile	Median	75th Percentile
Customer Service Complaints per 1000 Custom	0.00	6.87	36.13	45.95	0.23	58.87	287.19	7.23	69.12	106.35

Sample Size	
Water Operations	7
Wastewater Operations	3
Combined Operations	13

Technical Quality Complaints per 1000 Customers

Purpose:
This indicator measures the complaint rates experienced by the utility, with individual quantification of those related to customer service and those related to core utility services. It is expressed as complaints per 1000 customer accounts.

Calculation:
Technical Quality Complaint Rate = (1000) # technical quality associated complaints # of active customer accounts

Definitions:
· Active Customer Account means all customer accounts of all classes that were active for some or all of the reporting period. A single account may include service through more than one water or sewer service connection.
· A complaint is an expression of dissatisfaction conveyed to a utility employee acting in his/her official capacity and deemed valid by utility, whether or not action is taken to resolve it. Complaints may be communicated orally or in writing.
· Customer refers to an individual service agreement for water or sewer service at a single property, regardless of size or billing category. An individual may own more than one property and be counted as a customer more than once.
· Technical quality of service complaints are directly related to core services of the utility. They include complaints associated with water quality, taste, odor, appearance and pressure, sewage back-ups and overflows, disruptions of water or sewer service, disruptions of traffic, and facilities upkeep.

		Water Operations			Wastewater Operations			Combined Operations		
	Santa Clara Valley Water District	25th Percentile	Median	75th Percentile	25th Percentile	Median	75th Percentile	25th Percentile	Median	75th Percentile
Technical Quality Complaints per 1000 Custome	0.00	0.69	3.93	8.24	0.32	4.17	118.11	1.71	12.80	78.82

Sample Size	
Water Operations	8
Wastewater Operations	4
Combined Operations	14

Disruptions of Water Service Rate
Planned

Purpose:
This set of six indicators quantifies the numbers of water outages experienced by utility customers. Each is expressed as the number of customers experiencing disruptions per 1000 customer accounts per year.

Calculation:
Disruption Rate = (1,000) Number of customers experiencing disruption / Number of active customer accounts

Definitions:
· Active customer account means all customer accounts that were active for some or all of the reporting period. A single account may include service through more than one water service connection.
· Disruption of (water) service means any and all conditions within facilities or the distribution system under control of the utility whereby a customer loses full water service or has normal delivery pressure reduced below 20 pounds per square inch during a repair. Specific exclusions include: complaints of low pressure that are unrelated to a system condition requiring repair work; repairs to service piping under control of the customer; and shut-offs for nonpayment of bills.
· Planned disruptions are those where prior notice is given to all affected customers. Planned disruptions include new construction tie-ins, and replacements of valves, hydrants and other appurtenances under non-emergency conditions.

		Water Operations			Wastewater Operations			Combined Operations		
	Santa Clara Valley Water District	25th Percentile	Median	75th Percentile	25th Percentile	Median	75th Percentile	25th Percentile	Median	75th Percentile
Planned (less than 4 hours)	0.00	0.41	0.51	1.19	na	na	na	0.10	0.40	2.73
Planned (between 4 and 12 hours)	250.00	0.00	0.21	0.84	na	na	na	0.09	0.22	0.88
Planned (greater than 12 hours)	125.00	0.00	0.00	0.91	na	na	na	0.00	0.00	0.00

Sample Size (maximum)	
Water Operations	7
Wastewater Operations	0
Combined Operations	13

Disruptions of Water Service Rate
Unplanned

Purpose:
This set of six indicators quantifies the numbers of water outages experienced by utility customers. Each is expressed as the number of customers experiencing disruptions per 1000 customer accounts per year.

Calculation:
Disruption Rate = (1,000) Number of customers experiencing disruption / Number of active customer accounts

Definitions:
· Active customer account means all customer accounts that were active for some or all of the reporting period. A single account may include service through more than one water service connection.
· Disruption of (water) service means any and all conditions within facilities or the distribution system under control of the utility whereby a customer loses full water service or has normal delivery pressure reduced below 20 pounds per square inch during a repair. Specific exclusions include: complaints of low pressure that are unrelated to a system condition requiring repair work; repairs to service piping under control of the customer; and shut-offs for nonpayment of bills.
·Unplanned disruptions include both those performed under emergency conditions where prior customer notice is impossible or impractical, and those which are otherwise planned but for which prior notice was not given. Unplanned disruptions usually occur during emergency pumping facility failures, pipeline breaks, and newly discovered major leaks where there is potential for unsafe conditions or significant property damage.

		Water Operations			Wastewater Operations			Combined Operations		
	Santa Clara Valley Water District	25th Percentile	Median	75th Percentile	25th Percentile	Median	75th Percentile	25th Percentile	Median	75th Percentile
Unplanned (less than 4 hours)	250.00	0.20	1.12	4.34	na	na	na	0.39	1.27	4.36
Unplanned (between 4 and 12 hours)	0.00	0.00	0.07	1.07	na	na	na	0.08	0.44	0.56
Unplanned (greater than 12 hours)	0.00	0.00	0.00	0.08	na	na	na	0.00	0.00	0.25

Sample Size (maximum)	
Water Operations	7
Wastewater Operations	0
Combined Operations	13

Residential Cost of Water and/or Sewer Service

Purpose:
These indicators allow utilities to compare the residential cost of water and sewer service based upon both a defined quantity of water use and the average residential bill amounts for those services.

This indicator has several parts. A utility reports the individual costs in items 1 – 4 if possible, deferring to options 5 and 6 only if it cannot.
1. Bill amount for monthly residential water service for a customer using 7500 gallons per month,
2. Average residential water bill amount for one month of service,
3. Bill amount for monthly residential sewer service for a customer using 7500 gallons of water per month,
4. Average residential sewer bill amount for one month of service,
5. For multiple service utilities that cannot provide individual costs, the total monthly bill amount for residential water and sewer service for a customer using 7500 gallons of water per month, and
6. For multiple service utilities that cannot provide individual costs, the average residential combined water and sewer bill amount for one month of service.

		Water Operations			Wastewater Operations			Combined Operations		
	Santa Clara Valley Water District	25th Percentile	Median	75th Percentile	25th Percentile	Median	75th Percentile	25th Percentile	Median	75th Percentile
Monthly residential water using 7500 Gs per mt	.	$10.49	$15.61	$25.13	na	na	na	$15.47	$21.89	$24.99
Avg. residential water bill amount for one mont	.	$13.15	$20.45	$33.10	na	na	na	$13.47	$16.60	$22.75
Monthly residential sewer using 7500 Gs per mt	.	na	na	na	$16.47	$22.13	$38.46	$16.18	$21.60	$35.00
Avg. residential sewer bill amount for one mont	.	na	na	na	$14.26	$17.50	$24.20	$14.41	$19.84	$27.00
Multi-service, monthly bill for combined service	.	na	na	na	na	na	na	$26.10	$29.89	$33.67
Multi-service, avg. residential combined service	.	na	na	na	na	na	na	$26.10	$31.38	$36.65

Sample Size (maximum)	
Water Operations	8
Wastewater Operations	6
Combined Operations	20

Customer Service Cost per Account

Purpose:
This indicator measures the amount of resources a utility applies to its customer service program.

Calculation:
Customer Service Cost per Active Account = Total Customer Service Costs / Number of Active Accounts

Definitions:
· Customer Service Costs are all direct salaries, employee benefits, and direct costs including contracts, which are associated with providing the following services to customers, plus a proportional share of total utility indirect costs.
- Activation of new accounts
- Meter reads, maintenance, and repair or replacement
- Preparation and delivery of bills
- Receipt and processing of payments
- Records maintenance
- Collection of delinquent accounts
- Processing of bankruptcies
- Provision of turn on / turn off services
- Receipt, investigation, and resolution of complaints
- Preparation and provision of outreach and educational materials including the Consumer Confidence Report

Specifically excluded are all costs associated with maintaining service pipelines and customer plumbing on the customer side of the meter if present, or service property line if no meter is present.
· Active customer account means all customer accounts that were active for some or all of the reporting period. A single account may include service through more than one water service connection.

		Water Operations			Wastewater Operations			Combined Operations		
	Santa Clara Valley Water District	25th Percentile	Median	75th Percentile	25th Percentile	Median	75th Percentile	25th Percentile	Median	75th Percentile
Customer Service Cost per Account	.	$17.80	$27.75	$35.70	$5.33	$11.92	$22.27	$13.68	$26.70	$32.71

Sample Size	
Water Operations	8
Wastewater Operations	6
Combined Operations	18

Billing Accuracy

Purpose:
This indicator measures the effectiveness of water and/or wastewater utility billing practices. The calculation shows the number of error-driven billing adjustments per 10,000 bills generated during the year.

Calculation:
Billing Accuracy = (10,000) (# of error-driven billing adjustments during reporting period) / # of bills generated during the reporting period

Definitions:
· Bill means the periodic statement of charges (volumetric, surcharges, and taxes) for water and/or sewer services which are calculated based on known volumes of water delivered or wastewater collected during a specific period of time.
· Error-driven billing adjustment is an adjustment to a customer's charges resulting from an error on the original bill actually sent to the customer, regardless of cause and including all such discoveries made by utility staff, the customer, or a third party. Errors include all those under control of the utility such as meter reads (whether by utility staff or the customer), data entry, and calculations or computer programming.

		Water Operations			Wastewater Operations			Combined Operations		
	Santa Clara Valley Water District	25th Percentile	Median	75th Percentile	25th Percentile	Median	75th Percentile	25th Percentile	Median	75th Percentile
Billing Accuracy	.	13.4	22.6	60.2	17.0	62.2	74.2	14.3	61.6	107.6

Sample Size	
Water Operations	8
Wastewater Operations	3
Combined Operations	13

Debt Ratio

Purpose:
The debt ratio quantifies the utility's level of indebtedness.

Calculation:
Debt Ratio = Total Liabilities / Total Assets

Definitions:
· Total liabilities are the entire obligations of the utility under law or equity. (They are categorized as such on the utility's financial statement. In essence, they are the total amount of dollars owed to others. Liabilities are defined and designated by the Government Accounting Standards Board (GASB) or the Financial Accounting Standards Board (FASB) (as applicable to each specific utility). They include outstanding bonds, outstanding long-term debt, outstanding short-term debt, payments owed to others, accounts payable, and deposits collected from customers.)
· Total assets are the entire resources of the utility, both tangible and intangible. (They are categorized as such on the utility's financial statement. They include the total value of properties and claims against others that are owned by the utility as expressed at original cost. Assets are defined and designated by the Government Accounting Standards Board (GASB) or the Financial Accounting Standards Board (FASB) (as applicable to each specific utility). They include accounts receivable, cash, inventories, service delivery facilities (less depreciation), cost of easements, cost of water rights, and all other items of value owned by the utility.)

		Water Operations			Wastewater Operations			Combined Operations		
	Santa Clara Valley Water District	25th Percentile	Median	75th Percentile	25th Percentile	Median	75th Percentile	25th Percentile	Median	75th Percentile
Debt Ratio	0.2	0.2	0.3	0.5	0.3	0.4	0.6	0.2	0.4	0.6

Sample Size	
Water Operations	9
Wastewater Operations	6
Combined Operations	18

System Renewal / Replacement Rate
Water

Purpose:
This indicator quantifies rate at which the utility is meeting its individual need for infrastructure renewal or replacement.

Calculation:
100*(actual expenditure and reserve / total present worth of renewal and replacement needs for each asset class)

Definitions:
· Water treatment facilities include all assets associated with treating source water to make it ready for distribution. They include those assets associated with disposal of solids accumulated during treatment.
· Water distribution system includes all piping, valves, hydrants, pump stations, storage facilities, service taps and meters, and other appurtenances conveying treated water to customers.
· Water miscellaneous assets include surface and ground water resources, source water storage facilities, office buildings, maintenance facilities, laboratories not associated with treatment process control, and land acquired to protect water resources.

		Water Operations			Wastewater Operations			Combined Operations		
	Santa Clara Valley Water District	25th Percentile	Median	75th Percentile	25th Percentile	Median	75th Percentile	25th Percentile	Median	75th Percentile
Water pipeline	0.3%	0.3%	5.3%	10.7%	na	na	na	0.8%	1.3%	32.6%
Water treatment facility and pipeline	0.4%	1.2%	2.3%	6.8%	na	na	na	0.6%	1.5%	13.6%

Sample Size (maximum)	
Water Operations	6
Wastewater Operations	0
Combined Operations	11

System Renewal / Replacement Rate
Wastewater

Purpose:
This indicator quantifies rate at which the utility is meeting its individual need for infrastructure renewal or replacement.

Calculation:
100*(actual expenditure and reserve / total present worth of renewal and replacement needs for each asset class)

Definitions:
· Wastewater collection assets include all piping, manholes, clean-outs, pumping facilities and force mains used to convey wastewater to a central location for treatment.
· Wastewater treatment facilities include all assets at each facility used to treat wastewater, treat and dispose of solids, and protect air quality.
· Wastewater miscellaneous assets inciude office buildings, maintenance facilities, and laboratories not associated with process control.

		Water Operations			Wastewater Operations			Combined Operations		
	Santa Clara Valley Water District	25th Percentile	Median	75th Percentile	25th Percentile	Median	75th Percentile	25th Percentile	Median	75th Percentile
Wastewater pipelines and collections	.	na	na	na	1.6%	2.2%	6.5%	0.7%	3.0%	25.5%
Wastewater treatment facility and pumping	.	na	na	na	1.2%	3.8%	7.4%	0.9%	3.1%	14.0%

Sample Size (maximum)	
Water Operations	0
Wastewater Operations	5
Combined Operations	11

Return on Assets

Purpose:
Return on assets measures the financial effectiveness of the utility.

Calculation:
Return on Assets = Net Income / Total Assets

Definitions:
· Net Income is titled as such on the utility's financial statement, and is defined and designated by the Government Accounting Standards Board (GASB) or the Financial Accounting Standards Board (FASB), as applicable to each specific utility.
· Total assets are the entire resources of the utility, both tangible and intangible. (They are categorized as such on the utility's financial statement. They include the total value of properties and claims against others that are owned by the utility as expressed at original cost. Assets are defined and designated by the Government Accounting Standards Board (GASB) or the Financial Accounting Standards Board (FASB) (as applicable to each specific utility). They include accounts receivable, cash, inventories, service delivery facilities (less depreciation), cost of easements, cost of water rights, and all other items of value owned by the utility.)

		Water Operations			Wastewater Operations			Combined Operations		
	Santa Clara Valley Water District	25th Percentile	Median	75th Percentile	25th Percentile	Median	75th Percentile	25th Percentile	Median	75th Percentile
Return on Assets	6.0%	2.0%	4.4%	5.9%	0.5%	1.2%	3.4%	0.5%	1.9%	4.8%

Sample Size	
Water Operations	9
Wastewater Operations	6
Combined Operations	17

Drinking Water Compliance Rate

Purpose:
This indicator quantifies the percentage of time each year that a water utility meets all of the health-related drinking water standards in U.S. National Primary Drinking Water Regulations.

Calculation:
Drinking Water Compliance Rate (%) = (100) Number of days in full compliance / 365 days

Definitions:
· Definitions of regulated contaminants and treatment techniques are contained in 40 CFR Part 141 (the National Primary Drinking Water Regulations).
· Non-compliance refers to exceedance of an applicable primary maximum contaminant level or less than full compliance with an applicable treatment technique.

		Water Operations			Wastewater Operations			Combined Operations		
	Santa Clara Valley Water District	25th Percentile	Median	75th Percentile	25th Percentile	Median	75th Percentile	25th Percentile	Median	75th Percentile
Drinking Water Compliance Rate	100.0%	100.0%	100.0%	100.0%	na	na	na	100.0%	100.0%	100.0%

Sample Size	
Water Operations	9
Wastewater Operations	0
Combined Operations	19

Distribution System Water Loss

Purpose:
This indicator quantifies the percentage of produced water that fails to reach customers and cannot otherwise be accounted for through authorized usage.

Calculation:
Distribution Water Loss (% of distribution) = 100 (Volume of water distributed - Volume billed to customers) / Volume of water distributed

Definitions:
· Water losses are those water volumes that while under control of the utility do not find their way to authorized uses. Water losses consist of real losses and apparent losses. The former are true losses of water from the utility's system, up to the point of customer metering. Apparent losses consist of unauthorized use and inaccuracies associated with metering. Water losses occur throughout the water system, from source water intakes, transmission pipelines, treatment facilities, distribution pipelines and storage facilities. (For this indicator, the focus is on losses from the point's) of distribution through the points of customer service meters.)
· Distributed water is the total volume of water entering the distribution system from all sources, including treatment facilities, well fields, individual wells, and purchased water connections. Distributed water is the total volume of water entering the distribution system from all sources, including treatment facilities, well fields, individual wells, and purchased water connections.
· Authorized consumption is the volume of water taken by all classes of registered customers, the water supplier, and others who are authorized to do so by the utility. Authorized consumption includes fire fighting and training, flushing of mains and sewers, street cleaning, watering of municipal properties, public fountains, and frost protection. Authorized consumption may be metered or un-metered, and billed or unbilled, according to local utility practice.

		Water Operations			Wastewater Operations			Combined Operations		
	Santa Clara Valley Water District	25th Percentile	Median	75th Percentile	25th Percentile	Median	75th Percentile	25th Percentile	Median	75th Percentile
Distribution System Water Loss	0.3%	0.7%	11.5%	16.7%	na	na	na	8.3%	9.4%	12.3%

Sample Size	
Water Operations	7
Wastewater Operations	0
Combined Operations	16

Water Distribution System Integrity

Purpose:
This indicator quantifies the condition of the water distribution system, expressed the total annual number of leaks and pipeline breaks per 100 miles of distribution piping.

Calculation:
Frequency Rate = 100 (total number of leaks + total number of breaks) / Total miles of distribution piping

Definitions:
· Distribution piping includes all pipes, valves, hydrants, and other appurtenances conveying treated water between treatment facilities and the final point of utility control over customer service connections. Customer service piping downstream of that point is not part of the distribution system.
· Break means physical damage to a pipe, valve, hydrant, or other appurtenance which results in an abrupt loss of water.
· Leak means an opening in a distribution pipeline, valve, hydrant, appurtenance or service connection which is continuously losing water. The rate of leakage may be stable or progressive.

		Water Operations			Wastewater Operations			Combined Operations		
	Santa Clara Valley Water District	25th Percentile	Median	75th Percentile	25th Percentile	Median	75th Percentile	25th Percentile	Median	75th Percentile
Water Distribution System Integrity	.	20.4	40.3	87.2	na	na	na	19.9	83.6	139.8

Sample Size	
Water Operations	5
Wastewater Operations	0
Combined Operations	18

Qualserve Performance Indicators for Water and Wastewater Utilities Pilot Survey
Water Operations

Operations & Maintenance Cost Ratios

- O&M Cost per Account
- O&M Cost per MG Processed
- Direct Cost of Treatment per MG

Purpose:
Three indicators each are proposed for water and wastewater utilities to quantify all utility costs related to operations and maintenance, with break-outs of those costs related to water or wastewater treatment, as related to volumes processed and the number of active customers.

Calculation:
· O & M Cost per Account = Total Operations & Maintenance Costs (less depreciation) / Total number of active customer accounts
· O & M Cost per MG Processed = Total Operations & Maintenance Costs (less depreciation) / Volume processed during the reporting period (in MG)
· Direct Cost of Treatment per MG = Total Direct O & M Costs for Water and/or Wastewater Treatment / Volume processed during the reporting period (in MG)

Definitions:
· Active customer account means all customer accounts of all classes that were active for some or all of the reporting period. A single account may include service through more than one water or sewer service connection.
· Total volume processed (distributed water) refers to the total volume of water and/or wastewater processed by the utility during the reporting period. It is reported in millions of gallons.
· Total direct operations and maintenance costs for water and/or wastewater treatment is the total costs for salaries, direct benefits, and direct operational and maintenance costs associated with treatment. It includes pumping costs only within treatment facilities but not those associated with delivery of water or wastewater to treatment facilities nor those associated with discharge of treated solids or liquids leaving wastewater treatment facilities. Costs of solids treatment are included.

		Water Operations			Wastewater Operations			Combined Operations		
	Santa Clara Valley Water District	25th Percentile	Median	75th Percentile	25th Percentile	Median	75th Percentile	25th Percentile	Median	75th Percentile
O&M Cost per Account	.	$166	$244	$322	na	na	na	$126	$211	$317
O&M Cost per MG Processed	$2,002	$864	$944	$1,466	na	na	na	$866	$1,096	$2,221
Direct Cost of Treatment per MG	.	$294	$470	$1,205	na	na	na	$295	$667	$1,565

Sample Size (maximum)	
Water Operations	8
Wastewater Operations	0
Combined Operations	18

Planned Maintenance Ratios

- Planned Maintenance Ratio in Percent (Hours)
- Planned Maintenance Ratio in Percent (Cost)

Purpose:
This indicator is designed to allow comparison of how effectively utilities are investing in planned maintenance.

Calculation:
· Planned Maintenance Ratio in Percent (Hours) = (100) Hours of Planned Maintenance / (Hours of Planned + Corrective Maintenance)
· Planned Maintenance Ratio in Percent (Cost) = (100) Cost of Planned Maintenance / (Cost of Planned + Corrective Maintenance)

Definitions:
· Planned maintenance is all maintenance undertaken in advance of asset failure. Planned maintenance may be predictive or preventive.
· Corrective maintenance is all maintenance undertaken after asset failure.

		Water Operations			Wastewater Operations			Combined Operations		
	Santa Clara Valley Water District	25th Percentile	Median	75th Percentile	25th Percentile	Median	75th Percentile	25th Percentile	Median	75th Percentile
Planned Maintenance Ratio in Percent (Hours)	61.9%	42.0%	61.9%	77.7%	na	na	na	32.1%	49.6%	66.5%
Planned Maintenance Ratio in Percent (Cost)	$0.42	$0.41	$0.46	$0.76	na	na	na	$0.21	$0.36	$0.82

Sample Size (maximum)	
Water Operations	6
Wastewater Operations	0
Combined Operations	12

Sewer Overflow Rate

Purpose:
This indicator provides a measure of collection system piping condition and the effectiveness of routine maintenance by quantifying the number of sewer overflows per 100 miles of collection piping.

Calculation:
Sewer Overflow Rate = 100 (Total number of sewer overflows during the reporting period) / Total miles of pipe in sewage collection system

Definitions:
· An overflow refers to a discharge from a sewer through a manhole, clean-out, pumping facility, customer floor drain, or the drain in a fixture, if that discharge is related to limitations or problems with collection or treatment system components under control of the utility. Overflows caused by limitations or problems within customer-controlled piping and facilities are specifically excluded from this definition. A single limitation or problem can result in multiple overflows.
· A dry weather sewer overflow is an overflow from a combined sanitary/storm sewer experienced during weather conditions where the portion of flow attributed to storm water is negligible.
· The collection system is comprised of all gravity sewerage piping, manholes, pressure sewers and lift stations under control of the utility from the point of customer property lines to the treatment facility or point of interception by another wastewater utility. Portions of the collection system may convey both sanitary sewage and storm water.

		Water Operations			Wastewater Operations			Combined Operations		
	Santa Clara Valley Water District	25th Percentile	Median	75th Percentile	25th Percentile	Median	75th Percentile	25th Percentile	Median	75th Percentile
Sewer Overflow Rate	.	na	na	na	2.3	5.3	9.1	1.7	3.8	8.2

Sample Size	
Water Operations	0
Wastewater Operations	6
Combined Operations	16

Collection System Integrity

Purpose:
This indicator provides a measure of the condition of a sewage collection system. The indicator expresses the number of collection system failures each year per 100 miles of collection system piping.

Calculation:
Failure Rate = 100 (Total number of collection system failures during the year) / Total miles of collection system piping

Definitions:
· Collection system means all gravity sewerage piping, manholes, pressure sewers and lift stations under control of the utility from the point of customer property lines to the treatment facility or point of interception by another wastewater utility. Portions of the collection system may convey both sanitary sewage and storm water.
· A collection system failure means a loss of capacity resulting from a flow restriction in gravity or pressurized sewer systems. Flow restrictions may be caused by deposition of foreign materials; structural failures of pipes, appurtenances, or manholes; deterioration of collection system materials; and root intrusion. Low spots in gravity sewers (sometimes called "swags") are failures if there is potential for deposition and diminished sewer capacity. If left unattended, collection system failures can result in cave-ins, back-ups or overflows. Maintenance activities such as sewer cleaning, rodding, root removal, and minor repairs to minimize infiltration or inflow are not collection system failures. Electrical and mechanical lift station failures unrelated to flow restrictions, electrical power outages at lift stations, and failures that occur on customer properties, are not counted as failures for the purpose of this indicator.

		Water Operations			Wastewater Operations			Combined Operations		
	Santa Clara Valley Water District	25th Percentile	Median	75th Percentile	25th Percentile	Median	75th Percentile	25th Percentile	Median	75th Percentile
Collection System Integrity	.	na	na	na	0.4	3.6	31.9	1.6	5.0	10.8

Sample Size	
Water Operations	0
Wastewater Operations	5
Combined Operations	17

Wastewater Treatment Effectiveness Rate

Purpose:
This indicator quantifies a utility's compliance with the effluent quality standards in effect at each of its wastewater treatment facilities. The indicator is expressed as the percent of time each year that an individual wastewater treatment facility is in full compliance with applicable effluent quality requirements.

Calculation:
WWTER = 100 (365 – Total number of standard non-compliance days) / 365

Definitions:
· An operating/discharge permit is one issued through the National Pollutant Discharge Elimination System or its equivalent delegated state program.
· A standard non-compliance day is any day during which the wastewater utility, through actual monitoring, determines that it has not met one or more of its permitted effluent quality standards at an individual treatment facility.

		Water Operations			Wastewater Operations			Combined Operations		
	Santa Clara Valley Water District	25th Percentile	Median	75th Percentile	25th Percentile	Median	75th Percentile	25th Percentile	Median	75th Percentile
Wastewater Treatment Effectiveness Rate	.	na	na	na	0.9	1.0	1.0	0.8	1.0	1.0

Sample Size	
Water Operations	0
Wastewater Operations	5
Combined Operations	19

Operations & Maintenance Cost Ratios

- O&M Cost per Account
- O&M Cost per MG Processed
- Direct Cost of Treatment per MG

Purpose:
Three indicators each are proposed for water and wastewater utilities to quantify all utility costs related to operations and maintenance, with break-outs of those costs related to water or wastewater treatment, as related to volumes processed and the number of active customers.

Calculation:
· O & M Cost per Account = Total Operations & Maintenance Costs (less depreciation) / Total number of active customer accounts
· O & M Cost per MG Processed = Total Operations & Maintenance Costs (less depreciation) / Volume processed during the reporting period (in MG)
· Direct Cost of Treatment per MG = Total Direct O & M Costs for Water and/or Wastewater Treatment / Volume processed during the reporting period (in MG)

Definitions:
· Active customer account means all customer accounts of all classes that were active for some or all of the reporting period. A single account may include service through more than one water or sewer service connection.
· Total volume processed (distributed water) refers to the total volume of water and/or wastewater processed by the utility during the reporting period. It is reported in millions of gallons.
· Total direct operations and maintenance costs for water and/or wastewater treatment is the total costs for salaries, direct benefits, and direct operational and maintenance costs associated with treatment. It includes pumping costs only within treatment facilities but not those associated with delivery of water or wastewater to treatment facilities nor those associated with discharge of treated solids or liquids leaving wastewater treatment facilities. Costs of solids treatment are included.

		Water Operations			Wastewater Operations			Combined Operations		
	Santa Clara Valley Water District	25th Percentile	Median	75th Percentile	25th Percentile	Median	75th Percentile	25th Percentile	Median	75th Percentile
O&M Cost per Account	.	na	na	na	$215	$286	$417	$152	$174	$356
O&M Cost per MG Processed	$380	na	na	na	$1,603	$2,363	$27,069	$987	$1,359	$3,658
Direct Cost of Treatment per MG	.	na	na	na	$543	$1,053	$9,905	$653	$1,141	$1,850

Sample Size (maximum)	
Water Operations	0
Wastewater Operations	5
Combined Operations	18

Planned Maintenance Ratios

- Planned Maintenance Ratio in Percent (Hours)
- Planned Maintenance Ratio in Percent (Cost)

Purpose:
This indicator is designed to allow comparison of how effectively utilities are investing in planned maintenance.

Calculation:
· Planned Maintenance Ratio in Percent (Hours) = (100) Hours of Planned Maintenance / (Hours of Planned + Corrective Maintenance)
· Planned Maintenance Ratio in Percent (Cost) = (100) Cost of Planned Maintenance / (Cost of Planned + Corrective Maintenance)

Definitions:
· Planned maintenance is all maintenance undertaken in advance of asset failure. Planned maintenance may be predictive or preventive.
· Corrective maintenance is all maintenance undertaken after asset failure.

		Water Operations			Wastewater Operations			Combined Operations		
	Santa Clara Valley Water District	25th Percentile	Median	75th Percentile	25th Percentile	Median	75th Percentile	25th Percentile	Median	75th Percentile
Planned Maintenance Ratio in Percent (Hours)	.	na	na	na	14.2%	39.4%	46.3%	47.5%	57.3%	75.4%
Planned Maintenance Ratio in Percent (Cost)	.	na	na	na	$0.09	$0.22	$0.46	$0.26	$0.60	$0.77

Sample Size (maximum)	
Water Operations	0
Wastewater Operations	5
Combined Operations	13

Qualserve Performance Indicators for Water and Wastewater Utilities Pilot Survey
Frequency Distribution Summary

		Type						Total	
		Water only		Wastewater only		Combined			
		Count	Percent	Count	Percent	Count	Percent	Count	Percent
What is your corporate structure?	Public (part of local governance, non-enterprise)	0	0.0%	0	0.0%	1	5.0%	1	2.9%
	Public (part of local governance, enterprise fund)	3	33.3%	3	50.0%	10	50.0%	16	45.7%
	Public (independent governance)	2	22.2%	3	50.0%	8	40.0%	13	37.1%
	Investor-owned (private or publicly traded stock)	1	11.1%	0	0.0%	0	0.0%	1	2.9%
	Other	3	33.3%	0	0.0%	0	0.0%	3	8.6%
	NA	0	0.0%	0	0.0%	1	5.0%	1	2.9%
Total		9	100.0%	6	100.0%	20	100.0%	35	100.0%

		Type						Total	
		Water only		Wastewater only		Combined			
		Count	Percent	Count	Percent	Count	Percent	Count	Percent
What is your utility's form of Governance?	Board	7	77.8%	3	50.0%	10	50.0%	20	57.1%
	Government	2	22.2%	3	50.0%	9	45.0%	14	40.0%
	NA	0	0.0%	0	0.0%	1	5.0%	1	2.9%
Total		9	100.0%	6	100.0%	20	100.0%	35	100.0%

		Type						Total Respondents	
		Water only		Wastewater only		Combined		Count	Percent
		Count	Percent	Count	Percent	Count	Percent		
What utility memberships does your organization maintain?	AWWA	9	100.0%	4	66.7%	19	95.0%	32	91.4%
	AwwaRF	9	100.0%	0	0.0%	16	80.0%	25	71.4%
	WEF	0	0.0%	5	83.3%	19	95.0%	24	68.6%
	AMSA	0	0.0%	4	66.7%	12	60.0%	16	45.7%
	AMWA	5	55.6%	0	0.0%	8	40.0%	13	37.1%
	NAWC	1	11.1%	0	0.0%	1	5.0%	2	5.7%
	WERF	0	0.0%	5	83.3%	12	60.0%	17	48.6%
	NA	0	0.0%	0	0.0%	1	5.0%	1	2.9%
Total Respondents		9		6		20		35	

Qualserve Performance Indicators for Water and Wastewater Utilities Pilot Survey
Frequency Distribution Summary

		Type						Total	
		Water only		Wastewater only		Combined			
		Count	Percent	Count	Percent	Count	Percent	Count	Percent
Please indicate your utility's interest in participating in future metrics and process benchmarking activities with other utilities to establish industry-wide performance indicators	High	9	100.0%	5	83.3%	16	80.0%	30	85.7%
	Medium	0	0.0%	1	16.7%	3	15.0%	4	11.4%
	NA	0	0.0%	0	0.0%	1	5.0%	1	2.9%
Total		9	100.0%	6	100.0%	20	100.0%	35	100.0%

		Type						Total	
		Water only		Wastewater only		Combined			
		Count	Percent	Count	Percent	Count	Percent	Count	Percent
Does your utility have taxing authority?	Yes	2	22.2%	1	16.7%	3	15.0%	6	17.1%
	No	7	77.8%	5	83.3%	16	80.0%	28	80.0%
	NA	0	0.0%	0	0.0%	1	5.0%	1	2.9%
Total		9	100.0%	6	100.0%	20	100.0%	35	100.0%

Qualserve Performance Indicators for Water and Wastewater Utilities Pilot Survey
General Background Information

End date for the 12-month period for the data submitted	What year did your utility first provide water service?	What year did your utility first provide wastewater service?	What is your utility's current Corporate Bond Rating?
12/31/2001	Definitions	1873	AAA
31-Dec-01	Late 1800's	1946	S&P: AA Moody's: Aa3
30-Jun-02	1919	1979	Aaa
30-Jun-02	1902	1952	Moody's A1/Standard & Poor's A+
30-Jun-02	1965	1946	A
6/30/2002	1885	1940's	AAA (Fitch) AA (S&P)
30-Jun-02	1951	1904	AAA
30-Jun-02	1900	At Least 1920's	AAA--S&P, AAA--Fitch, Aa1--Moody's
30-Jun-02	1857	1937	AA- Standard and Poor's
30-Jun-02	1955	1964	Moody A1, Standard & Poor A+
4/30/2002	1860	1950	Moody's Aaa (insured) - A1 (underlying)
30-Jun-02	1913	1942	AA- Standard & Poor's; Aa3 Moody's
31-Dec-01	1929	1960	AA Fitch; Aa3 Moody's; A+ S&P
25-Jun-02	1910	1961	Aa3
Most is September 30, 2002	1935	1978	A2
30-Jun-02	1885	1892	AA+ and Aa1
Sept. 30, 2002	1917	1952	AA Standard & Poor's; Aa2 Moody's
09/30/2002 - See notes.	1908	1848	AA
Dec. 31,2001	1887	1917	AAA
30-Jun-02	1923	1987	Aaa
30-Jun-02	1848	1984	Not Rated
30-Jun-02	1884	1992	A1
Dec. 31, 2001	1982	1955	Water AA/Aa2; Sewer AA-/Aa2
	1984	1987	Aaa
30-Sep-02	1992	1929	A
12/31/2001	1890		Moody's Aaa
30-Jun-02	1965		AA+ (Standard & Poor)
31-Dec-01	1890		A1 (Moody's) AA- (Fitch)
30-Jun-02			Aa3 and A+
11/15/2002			A
Dec. 31, 2001			Aa3
31-Dec-02			Aa1
30-Jun-02			Fitch IBCA - AA & Standard & Poor's Corp - AA
30-Jun-02			Moody's Aa3, Standard and Poors AA
Dec. 31, 2001			

Qualserve Performance Indicators for Water and Wastewater Utilities Pilot Survey
General Quantitative Background Information

	Definitions															
	Water only				Wastewater only				Combined				Total			
		Percentiles				Percentiles				Percentiles				Percentiles		
	Count	25	50	75	Count	25	50	75	Count	25	50	75	Count	25	50	75
Wholesale Population - # of Citizens - Potable Water Service	5	38,358	150,000	1,350,000	0	na	na	na	7	9,500	324,795	703,000	12	30,675	237,398	925,750
Retail Population - # Electric Generation - Potable Water Service	7	69,703	262,335	516,364	0	na	na	na	13	44,051	152,420	492,500	20	67,002	189,519	477,807
Residential - # of Customer Accounts - Potable Water Service	8	32,647	83,447	166,076	0	na	na	na	18	20,351	39,491	157,453	26	20,623	56,277	157,453
Commercial / Industrial - # of Customer Accounts - Potable Water Service	7	1,545	4,379	22,107	0	na	na	na	17	1,421	5,052	12,710	24	1,579	4,716	13,826
Wholesale - # of Customer Accounts - Potable Water Service	8	1	7	16	0	na	na	na	14	0	3	25	22	0	5	20
Total Capacity(MGD) - Potable Water Service	9	85	170	202	0	na	na	na	18	15	45	179	27	24	100	184
Average Daily Flow(MGD) - Potable Water Service	9	47	72	119	0	na	na	na	17	9	25	98	26	15	51	106
Wholesale Population - # of Citizens - Wastewater Collection and Treatment	0	na	na	na	3	40,000	80,000	168,400	7	15,000	78,000	631,700	10	22,500	79,000	297,425
Retail Population - # Electric Generation - Wastewater Collection and Treatment	0	na	na	na	3	536,000	661,825	1,600,000	12	26,862	109,500	180,778	15	41,447	152,420	563,374
Residential - # of Customer Accounts - Wastewater Collection and Treatment	0	na	na	na	6	129,223	204,859	444,489	18	14,165	28,065	145,533	24	19,139	47,633	181,616
Commercial / Industrial - # of Customer Accounts - Wastewater Collection and Treatment	0	na	na	na	6	10,383	16,000	42,263	16	1,164	2,216	6,266	22	1,371	4,742	15,475
Wholesale - # of Customer Accounts - Wastewater Collection and Treatment	0	na	na	na	3	5	10	27	11	0	1	4	14	0	1	11
Total Capacity(MGD) - Wastewater Collection and Treatment	0	na	na	na	6	94	145	318	17	7	26	97	23	12	37	157
Average Daily Flow(MGD) - Wastewater Collection and Treatment	0	na	na	na	6	61	122	219	17	6	20	62	23	11	28	100
What percent of your utility's future capital improvement programs will be financed with debt?	9	11.8%	33.0%	73.0%	6	0.0%	53.0%	76.3%	19	25.0%	50.0%	75.0%	34	19.8%	50.0%	75.0%
What is your utility's typical time horizon for capital improvement programs in years?	9	5	10	12.5	6	5	5	11.25	19	5	5	10	34	5	5	10
What percent of your employees are represented by labor bargaining units?	9	0.0%	45.2%	94.5%	6	0.0%	67.0%	99.3%	19	0.0%	0.0%	74.0%	34	0.0%	46.1%	87.4%

Qualserve Performance Indicators for Water and Wastewater Utilities Pilot Survey
Performance Indicators Summary for All Participants

	All Participants				
	Count		Percentiles		
	Valid	Missing	25	50	75
Organizational Best Practices Index	33	2	20.5	23.0	26.5
Employee Health & Safety Severity Rate (Lost work days per 100 employees per year)	32	3	22.7	51.8	233.5
Training Hours per Employee	30	5	12.2	25.9	39.2
Customer accounts per employee (Water)	27	8	339.1	486.3	628.7
Customer accounts per employee (Wastewater)	24	11	366.1	567.9	697.7
MGD processed per employee (Water)	27	8	0.19	0.26	0.39
MGD processed per employee (Wastewater)	24	11	0.19	0.28	0.31
Customer Service Complaint Rate (Complaints per 1000 customers per reporting period)	23	12	6.9	42.3	86.0
Technical Quality Complaint Rate (Complaints per 1000 customers per reporting period)	26	9	0.7	4.8	26.2
Disruption rate (Planned - Less than 4 hours)	19	16	0.1	0.5	1.2
Disruption rate (Planned - Between 4 and 12 hours)	19	16	0.1	0.2	0.9
Disruption rate (Planned - Greater than 12 hours)	20	15	0.0	0.0	0.0
Disruption rate (Unplanned - Less than 4 hours)	19	16	0.3	1.1	4.3
Disruption rate (Unplanned - Between 4 and 12 hours)	20	15	0.0	0.4	0.7
Disruption rate (Unplanned - Greater than 12 hours)	20	15	0.0	0.0	0.2
Bill amount for monthly residential water service for a customer using 7500 gallons per month	28	7	$13.90	$18.81	$24.99
Average residential water bill amount for one month of service	27	8	$13.47	$19.86	$24.03
Bill amount for monthly residential sewer service for a custome r using 7500 gallons of water per month	24	11	$16.29	$21.87	$34.50
Average residential sewer bill amount for one month of service	25	10	$14.83	$19.63	$26.97
For multiple service utilities that cannot provide individual costs, the total monthly bill amount for residential water and sewer service for a customer using 7500 gallons of water per month	2	33	$26.10	$29.89	$33.67
For multiple service utilities that cannot provide individual costs, the average residential combined water and sewer bill amount for one month of service	2	33	$26.10	$31.38	$36.65
Customer Service Cost per Account	32	3	$12.64	$25.14	$31.64
Billing Accuracy (Error-driven billing adjustments per 10,000 bills)	24	11	14.1	52.4	72.7
Debt Ratio	33	2	0.2	0.4	0.6
Renewal rate percentage (Water pipeline)	17	18	0.6%	4.7%	18.1%
Renewal rate percentage (Water Treatment Facility and Pumping)	16	19	0.7%	2.1%	7.4%
Renewal rate percentage (Wastewater Pipelines and Collection)	15	20	1.2%	2.3%	8.8%
Renewal rate percentage (Wastewater Treatment Facility and Pumping)	16	19	0.9%	3.4%	8.3%
Return on Assets	32	3	0.7%	2.3%	4.8%
Drinking Water Compliance Rate (%)	28	7	100.0%	100.0%	100.0%
Distribution Water Loss (% of distribution)	23	12	8.2%	9.8%	12.7%
Water Distribution System Integrity (Total breaks and leaks per 100 miles of piping)	23	12	21.3	71.3	132.7
O&M Cost per Account (Water)	26	9	$131	$219	$320
O&M Cost per Account (Wastewater)	23	12	$159	$229	$365
O&M Cost per MG Processed (Water)	25	10	$869	$1,066	$1,734
O&M Cost per MG Processed (Wastewater)	21	14	$1,024	$1,942	$3,658
Direct Cost of Treatment per MG (Water)	23	12	$309	$637	$1,546

Qualserve Performance Indicators for Water and Wastewater Utilities Pilot Survey
Performance Indicators Summary for All Participants

	All Participants				
	Count		Percentiles		
	Valid	Missing	25	50	75
Direct Cost of Treatment per MG Processed	21	14	$653	$1,141	$1,850
Planned Maintenance Ratio in Percent (Hours) - Water	17	18	39.6%	50.0%	70.8%
Planned Maintenance Ratio in Percent (Hours) - Wastewater	18	17	38.6%	50.4%	67.7%
Planned Maintenance Ratio in Percent (Cost) - Water	15	20	$0.26	$0.43	$0.81
Planned Maintenance Ratio in Percent (Cost) - Wastewater	14	21	$0.22	$0.47	$0.73
Sewer Overflow Rate (Per 100 miles of pipe)	22	13	2.1	4.2	8.6
Collection System Integrity (Failure rate per 100 miles of pipe)	22	13	0.9	4.7	14.2
Wastewater Treatment Effectiveness Rate	24	11	85.4%	99.2%	100.0%

Qualserve Performance Indicators for Water and Wastewater Utilities Pilot Survey
Approximation Summary

APPX: What percent of your utility's future capital improvement programs will be financed with debt? * Type Crosstabulation

% within Type

		Type			Total
		Water only	Wastewater only	Combined	
APPX: What percent of your utility's future capital improvement programs will be financed with debt?	Approximation	44.4%	33.3%	50.0%	45.7%
	Non-approximation	55.6%	66.7%	45.0%	51.4%
	NA			5.0%	2.9%
Total		100.0%	100.0%	100.0%	100.0%

APPX: What is your utility's typical time horizon for capital improvement programs in years? * Type Crosstabulation

% within Type

		Type			Total
		Water only	Wastewater only	Combined	
APPX: What is your utility's typical time horizon for capital improvement programs in years?	Approximation	11.1%		10.0%	8.6%
	Non-approximation	88.9%	100.0%	85.0%	88.6%
	NA			5.0%	2.9%
Total		100.0%	100.0%	100.0%	100.0%

APPX: What percent of your employees are represented by labor bargaining units? * Type Crosstabulation

% within Type

		Type			Total
		Water only	Wastewater only	Combined	
APPX: What percent of your employees are represented by labor bargaining units?	Approximation	22.2%		15.0%	14.3%
	Non-approximation	77.8%	100.0%	80.0%	82.9%
	NA			5.0%	2.9%
Total		100.0%	100.0%	100.0%	100.0%

APPX: What year did your utility first provide water service? * Type Crosstabulation

% within Type

		Type			Total
		Water only	Wastewater only	Combined	
APPX: What year did your utility first provide water service?	Approximation			15.0%	8.6%
	Non-approximation	100.0%		80.0%	71.4%
	NA		100.0%	5.0%	20.0%
Total		100.0%	100.0%	100.0%	100.0%

APPX: What year did your utility first provide wastewater service? * Type Crosstabulation

% within Type

		Type			Total
		Water only	Wastewater only	Combined	
APPX: What year did your utility first provide wastewater service?	Approximation		16.7%	20.0%	14.3%
	Non-approximation		83.3%	75.0%	57.1%
	NA	100.0%		5.0%	28.6%
Total		100.0%	100.0%	100.0%	100.0%

Qualserve Performance Indicators for Water and Wastewater Utilities Pilot Survey
Approximation Summary

APPX: What is your utility's current Corporate Bond Rating? * Type Crosstabulation

% within Type

		Type			Total
		Water only	Wastewater only	Combined	
APPX: What is your utility's current Corporate Bond Rating?	Non-approximation	100.0%	100.0%	95.0%	97.1%
	NA			5.0%	2.9%
Total		100.0%	100.0%	100.0%	100.0%

APPX: Total work days away from work * Type Crosstabulation

% within Type

		Type			Total
		Water only	Wastewater only	Combined	
APPX: Total work days away from work	Approximation		16.7%	5.0%	5.7%
	Non-approximation	100.0%	66.7%	85.0%	85.7%
	NA		16.7%	10.0%	8.6%
Total		100.0%	100.0%	100.0%	100.0%

APPX: Total hours worked by all employees * Type Crosstabulation

% within Type

		Type			Total
		Water only	Wastewater only	Combined	
APPX: Total hours worked by all employees	Approximation	44.4%	16.7%	35.0%	34.3%
	Non-approximation	55.6%	66.7%	55.0%	57.1%
	NA		16.7%	10.0%	8.6%
Total		100.0%	100.0%	100.0%	100.0%

APPX: Sum of all qualified Formal training hours completed by all employees * Type Crosstabulation

% within Type

		Type			Total
		Water only	Wastewater only	Combined	
APPX: Sum of all qualified Formal training hours completed by all employees	Approximation	66.7%	16.7%	45.0%	45.7%
	Non-approximation	33.3%	66.7%	35.0%	40.0%
	NA		16.7%	20.0%	14.3%
Total		100.0%	100.0%	100.0%	100.0%

APPX: Total number of full time equivalents (FTEs) worked by employees * Type Crosstabulation

% within Type

		Type			Total
		Water only	Wastewater only	Combined	
APPX: Total number of full time equivalents (FTEs) worked by employees	Approximation	22.2%	16.7%	30.0%	25.7%
	Non-approximation	77.8%	66.7%	55.0%	62.9%
	NA		16.7%	15.0%	11.4%
Total		100.0%	100.0%	100.0%	100.0%

Qualserve Performance Indicators for Water and Wastewater Utilities Pilot Survey
Approximation Summary

APPX: Number of active water accounts * Type Crosstabulation

% within Type

		Type			Total
		Water only	Wastewater only	Combined	
APPX: Number of active water accounts	Approximation			15.0%	8.6%
	Non-approximation	100.0%		75.0%	68.6%
	NA		100.0%	10.0%	22.9%
Total		100.0%	100.0%	100.0%	100.0%

APPX: Number of active wastewater accounts * Type Crosstabulation

% within Type

		Type			Total
		Water only	Wastewater only	Combined	
APPX: Number of active wastewater accounts	Approximation		33.3%	15.0%	14.3%
	Non-approximation		66.7%	75.0%	54.3%
	NA	100.0%		10.0%	31.4%
Total		100.0%	100.0%	100.0%	100.0%

APPX: Average daily volume of water distributed (in MGD) * Type Crosstabulation

% within Type

		Type			Total
		Water only	Wastewater only	Combined	
APPX: Average daily volume of water distributed (in MGD)	Approximation	22.2%		10.0%	11.4%
	Non-approximation	77.8%		80.0%	65.7%
	NA		100.0%	10.0%	22.9%
Total		100.0%	100.0%	100.0%	100.0%

APPX: Average daily volume of wastewater distributed (in MGD) * Type Crosstabulation

% within Type

		Type			Total
		Water only	Wastewater only	Combined	
APPX: Average daily volume of wastewater distributed (in MGD)	Approximation		16.7%	10.0%	8.6%
	Non-approximation		83.3%	80.0%	60.0%
	NA	100.0%		10.0%	31.4%
Total		100.0%	100.0%	100.0%	100.0%

APPX: Number of FTEs supporting water service (include all supporting functions) * Type Crosstabulation

% within Type

		Type			Total
		Water only	Wastewater only	Combined	
APPX: Number of FTEs supporting water service (include all supporting functions)	Approximation	33.3%		55.0%	40.0%
	Non-approximation	66.7%		35.0%	37.1%
	NA		100.0%	10.0%	22.9%
Total		100.0%	100.0%	100.0%	100.0%

Qualserve Performance Indicators for Water and Wastewater Utilities Pilot Survey
Approximation Summary

APPX: Number of FTEs supporting wastewater service (include all supporting functions) * Type Crosstabulation

% within Type

		Type			Total
		Water only	Wastewater only	Combined	
APPX: Number of FTEs supporting wastewater service (include all supporting functions)	Approximation		33.3%	55.0%	37.1%
	Non-approximation		66.7%	35.0%	31.4%
	NA	100.0%		10.0%	31.4%
Total		100.0%	100.0%	100.0%	100.0%

APPX: Number of active customer accounts during the reporting period * Type Crosstabulation

% within Type

		Type			Total
		Water only	Wastewater only	Combined	
APPX: Number of active customer accounts during the reporting period	Approximation		16.7%	15.0%	11.4%
	Non-approximation	100.0%	66.7%	75.0%	80.0%
	NA		16.7%	10.0%	8.6%
Total		100.0%	100.0%	100.0%	100.0%

APPX: Number of customer service associated complaints received by the utility during the reporting period * Type Crosstabulation

% within Type

		Type			Total
		Water only	Wastewater only	Combined	
APPX: Number of customer service associated complaints received by the utility during the reporting period	Approximation	55.6%	16.7%	45.0%	42.9%
	Non-approximation	22.2%	33.3%	20.0%	22.9%
	NA	22.2%	50.0%	35.0%	34.3%
Total		100.0%	100.0%	100.0%	100.0%

APPX: Number of technical quality of service complaints received by the utility during the reporting period * Type Crosstabulation

% within Type

		Type			Total
		Water only	Wastewater only	Combined	
APPX: Number of technical quality of service complaints received by the utility during the reporting period	Approximation	55.6%	16.7%	40.0%	40.0%
	Non-approximation	33.3%	50.0%	30.0%	34.3%
	NA	11.1%	33.3%	30.0%	25.7%
Total		100.0%	100.0%	100.0%	100.0%

APPX: Planned Water Service Disruptions (Duration less than 4 hours) * Type Crosstabulation

% within Type

		Type			Total
		Water only	Wastewater only	Combined	
APPX: Planned Water Service Disruptions (Duration less than 4 hours)	Approximation	55.6%		45.0%	40.0%
	Non-approximation	22.2%		15.0%	14.3%
	NA	22.2%	100.0%	40.0%	45.7%
Total		100.0%	100.0%	100.0%	100.0%

Qualserve Performance Indicators for Water and Wastewater Utilities Pilot Survey
Approximation Summary

APPX: Planned Water Service Disruptions (Between 4 and 12 hours) * Type Crosstabulation

% within Type

		Type			Total
		Water only	Wastewater only	Combined	
APPX: Planned Water Service Disruptions (Between 4 and 12 hours)	Approximation	33.3%		45.0%	34.3%
	Non-approximation	44.4%		15.0%	20.0%
	NA	22.2%	100.0%	40.0%	45.7%
Total		100.0%	100.0%	100.0%	100.0%

APPX: Planned Water Service Disruptions (Greater than 12 hours) * Type Crosstabulation

% within Type

		Type			Total
		Water only	Wastewater only	Combined	
APPX: Planned Water Service Disruptions (Greater than 12 hours)	Approximation	11.1%		30.0%	20.0%
	Non-approximation	66.7%		35.0%	37.1%
	NA	22.2%	100.0%	35.0%	42.9%
Total		100.0%	100.0%	100.0%	100.0%

APPX: Unplanned Water Service Disruptions (Duration less than 4 hours) * Type Crosstabulation

% within Type

		Type			Total
		Water only	Wastewater only	Combined	
APPX: Unplanned Water Service Disruptions (Duration less than 4 hours)	Approximation	44.4%		45.0%	37.1%
	Non-approximation	33.3%		15.0%	17.1%
	NA	22.2%	100.0%	40.0%	45.7%
Total		100.0%	100.0%	100.0%	100.0%

APPX: Unplanned Water Service Disruptions (Between 4 and 12 hours) * Type Crosstabulation

% within Type

		Type			Total
		Water only	Wastewater only	Combined	
APPX: Unplanned Water Service Disruptions (Between 4 and 12 hours)	Approximation	44.4%		45.0%	37.1%
	Non-approximation	33.3%		20.0%	20.0%
	NA	22.2%	100.0%	35.0%	42.9%
Total		100.0%	100.0%	100.0%	100.0%

APPX: Unplanned Water Service Disruptions (Greater than 12 hours) * Type Crosstabulation

% within Type

		Type			Total
		Water only	Wastewater only	Combined	
APPX: Unplanned Water Service Disruptions (Greater than 12 hours)	Approximation	22.2%		30.0%	22.9%
	Non-approximation	55.6%		35.0%	34.3%
	NA	22.2%	100.0%	35.0%	42.9%
Total		100.0%	100.0%	100.0%	100.0%

Qualserve Performance Indicators for Water and Wastewater Utilities Pilot Survey
Approximation Summary

APPX: The total number of active customer accounts during the reporting period * Type Crosstabulation

% within Type

		Type			Total
		Water only	Wastewater only	Combined	
APPX: The total number of active customer accounts during the reporting period	Approximation			20.0%	11.4%
	Non-approximation	100.0%		65.0%	62.9%
	NA		100.0%	15.0%	25.7%
Total		100.0%	100.0%	100.0%	100.0%

APPX: Bill amount for monthly residential water service for a customer using 7500 gallons per month * Type Crosstabulation

% within Type

		Type			Total
		Water only	Wastewater only	Combined	
APPX: Bill amount for monthly residential water service for a customer using 7500 gallons per month	Approximation	11.1%		10.0%	8.6%
	Non-approximation	77.8%		90.0%	71.4%
	NA	11.1%	100.0%		20.0%
Total		100.0%	100.0%	100.0%	100.0%

APPX: Average residential water bill amount for one month of service * Type Crosstabulation

% within Type

		Type			Total
		Water only	Wastewater only	Combined	
APPX: Average residential water bill amount for one month of service	Approximation	22.2%		10.0%	11.4%
	Non-approximation	66.7%		85.0%	65.7%
	NA	11.1%	100.0%	5.0%	22.9%
Total		100.0%	100.0%	100.0%	100.0%

APPX: Bill amount for monthly residential sewer service for a customer using 7500 gallons of water per month * Type Crosstabulation

% within Type

		Type			Total
		Water only	Wastewater only	Combined	
APPX: Bill amount for monthly residential sewer service for a customer using 7500 gallons of water per month	Approximation		16.7%	10.0%	8.6%
	Non-approximation		66.7%	85.0%	60.0%
	NA	100.0%	16.7%	5.0%	31.4%
Total		100.0%	100.0%	100.0%	100.0%

APPX: Average residential sewer bill amount for one month of service * Type Crosstabulation

% within Type

		Type			Total
		Water only	Wastewater only	Combined	
APPX: Average residential sewer bill amount for one month of service	Approximation			10.0%	5.7%
	Non-approximation		100.0%	85.0%	65.7%
	NA	100.0%		5.0%	28.6%
Total		100.0%	100.0%	100.0%	100.0%

Qualserve Performance Indicators for Water and Wastewater Utilities Pilot Survey
Approximation Summary

PX: For multiple service utilities that cannot provide individual costs, the total monthly bill amount for residential water and sewer service for a customer using 7500 gallons of water per month * Type Crosstabulati

% within Type

		Type			Total
		Water only	Wastewater only	Combined	
APPX: For multiple service utilities that cannot provide individual costs, the total monthly bill amount for residential water and sewer service for a customer using 7500 gallons of water per month	Non-approximation			10.0%	5.7%
	NA	100.0%	100.0%	90.0%	94.3%
Total		100.0%	100.0%	100.0%	100.0%

APPX: For multiple service utilities that cannot provide individual costs, the average residential combined water and sewer bill amount for one month of service * Type Crosstabulation

% within Type

		Type			Total
		Water only	Wastewater only	Combined	
APPX: For multiple service utilities that cannot provide individual costs, the average residential combined water and sewer bill amount for one month of service	Non-approximation			10.0%	5.7%
	NA	100.0%	100.0%	90.0%	94.3%
Total		100.0%	100.0%	100.0%	100.0%

APPX: Total Customer Service Costs for the reporting period (include all supporting functions) * Type Crosstabulation

% within Type

		Type			Total
		Water only	Wastewater only	Combined	
APPX: Total Customer Service Costs for the reporting period (include all supporting functions)	Approximation	33.3%	33.3%	40.0%	37.1%
	Non-approximation	55.6%	66.7%	50.0%	54.3%
	NA	11.1%		10.0%	8.6%
Total		100.0%	100.0%	100.0%	100.0%

APPX: Number of Active Customer Accounts * Type Crosstabulation

% within Type

		Type			Total
		Water only	Wastewater only	Combined	
APPX: Number of Active Customer Accounts	Approximation		33.3%	20.0%	17.1%
	Non-approximation	100.0%	66.7%	75.0%	80.0%
	NA			5.0%	2.9%
Total		100.0%	100.0%	100.0%	100.0%

APPX: Number of bills generated during the reporting period * Type Crosstabulation

% within Type

		Type			Total
		Water only	Wastewater only	Combined	
APPX: Number of bills generated during the reporting period	Approximation	33.3%	16.7%	30.0%	28.6%
	Non-approximation	55.6%	66.7%	55.0%	57.1%
	NA	11.1%	16.7%	15.0%	14.3%
Total		100.0%	100.0%	100.0%	100.0%

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Approximation Summary

APPX: Number of error-driven billing adjustments made during the reporting period * Type Crosstabulation

% within Type

		Type			Total
		Water only	Wastewater only	Combined	
APPX: Number of error-driven billing adjustments made during the reporting period	Approximation	33.3%	16.7%	40.0%	34.3%
	Non-approximation	55.6%	33.3%	25.0%	34.3%
	NA	11.1%	50.0%	35.0%	31.4%
Total		100.0%	100.0%	100.0%	100.0%

APPX: Total Liabilities * Type Crosstabulation

% within Type

		Type			Total
		Water only	Wastewater only	Combined	
APPX: Total Liabilities	Approximation			5.0%	2.9%
	Non-approximation	100.0%	100.0%	85.0%	91.4%
	NA			10.0%	5.7%
Total		100.0%	100.0%	100.0%	100.0%

APPX: Total Assets * Type Crosstabulation

% within Type

		Type			Total
		Water only	Wastewater only	Combined	
APPX: Total Assets	Approximation			10.0%	5.7%
	Non-approximation	100.0%	100.0%	80.0%	88.6%
	NA			10.0%	5.7%
Total		100.0%	100.0%	100.0%	100.0%

APPX: Total present worth of renewal and replacement needs * Type Crosstabulation

% within Type

		Type			Total
		Water only	Wastewater only	Combined	
APPX: Total present worth of renewal and replacement needs	Approximation	22.2%	50.0%	35.0%	34.3%
	Non-approximation	44.4%	50.0%	25.0%	34.3%
	NA	33.3%		40.0%	31.4%
Total		100.0%	100.0%	100.0%	100.0%

APPX: Weighted average life * Type Crosstabulation

% within Type

		Type			Total
		Water only	Wastewater only	Combined	
APPX: Weighted average life	Approximation		50.0%	40.0%	31.4%
	Non-approximation	66.7%	50.0%	30.0%	42.9%
	NA	33.3%		30.0%	25.7%
Total		100.0%	100.0%	100.0%	100.0%

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Approximation Summary

APPX: Total actual expenditures or total amount of funds reserved for renewal and replacement * Type Crosstabulation

% within Type

		Type			Total
		Water only	Wastewater only	Combined	
APPX: Total actual expenditures or total amount of funds reserved for renewal and replacement	Approximation		33.3%	20.0%	17.1%
	Non-approximation	66.7%	50.0%	45.0%	51.4%
	NA	33.3%	16.7%	35.0%	31.4%
Total		100.0%	100.0%	100.0%	100.0%

APPX: Net Income * Type Crosstabulation

% within Type

		Type			Total
		Water only	Wastewater only	Combined	
APPX: Net Income	Approximation			5.0%	2.9%
	Non-approximation	100.0%	100.0%	80.0%	88.6%
	NA			15.0%	8.6%
Total		100.0%	100.0%	100.0%	100.0%

APPX: Total Assets * Type Crosstabulation

% within Type

		Type			Total
		Water only	Wastewater only	Combined	
APPX: Total Assets	Approximation			10.0%	5.7%
	Non-approximation	100.0%	100.0%	75.0%	85.7%
	NA			15.0%	8.6%
Total		100.0%	100.0%	100.0%	100.0%

nber of calendar days during which the utility was in full compliance with all drinking water quality and treatment technique requirements contained in the National Primary Drinking Water Regulations * Type Cro

% within Type

		Type			Total
		Water only	Wastewater only	Combined	
APPX: Number of calendar days during which the utility was in full compliance with all drinking water quality and treatment technique requirements contained in the National Primary Drinking Water Regulations	Approximation			10.0%	5.7%
	Non-approximation	100.0%		85.0%	74.3%
	NA		100.0%	5.0%	20.0%
Total		100.0%	100.0%	100.0%	100.0%

APPX: Total volume of water distributed for customer use * Type Crosstabulation

% within Type

		Type			Total
		Water only	Wastewater only	Combined	
APPX: Total volume of water distributed for customer use	Approximation			20.0%	11.4%
	Non-approximation	77.8%		65.0%	57.1%
	NA	22.2%	100.0%	15.0%	31.4%
Total		100.0%	100.0%	100.0%	100.0%

Qualserve Performance Indicators for Water and Wastewater Utilities Pilot Survey
Approximation Summary

APPX: Total volume of water billed to customers * Type Crosstabulation

% within Type

		Type			Total
		Water only	Wastewater only	Combined	
APPX: Total volume of water billed to customers	Approximation			15.0%	8.6%
	Non-approximation	88.9%		65.0%	60.0%
	NA	11.1%	100.0%	20.0%	31.4%
Total		100.0%	100.0%	100.0%	100.0%

APPX: Total miles of distribution piping * Type Crosstabulation

% within Type

		Type			Total
		Water only	Wastewater only	Combined	
APPX: Total miles of distribution piping	Approximation	11.1%		25.0%	17.1%
	Non-approximation	77.8%		65.0%	57.1%
	NA	11.1%	100.0%	10.0%	25.7%
Total		100.0%	100.0%	100.0%	100.0%

APPX: Total number of leaks during the reporting period * Type Crosstabulation

% within Type

		Type			Total
		Water only	Wastewater only	Combined	
APPX: Total number of leaks during the reporting period	Approximation			45.0%	25.7%
	Non-approximation	55.6%		45.0%	40.0%
	NA	44.4%	100.0%	10.0%	34.3%
Total		100.0%	100.0%	100.0%	100.0%

APPX: Total number of pipeline breaks experienced during the reporting period * Type Crosstabulation

% within Type

		Type			Total
		Water only	Wastewater only	Combined	
APPX: Total number of pipeline breaks experienced during the reporting period	Approximation			35.0%	20.0%
	Non-approximation	88.9%		55.0%	54.3%
	NA	11.1%	100.0%	10.0%	25.7%
Total		100.0%	100.0%	100.0%	100.0%

APPX: Total operations and maintenance costs (less depreciation) * Type Crosstabulation

% within Type

		Type			Total
		Water only	Wastewater only	Combined	
APPX: Total operations and maintenance costs (less depreciation)	Approximation	11.1%		25.0%	17.1%
	Non-approximation	88.9%	83.3%	65.0%	74.3%
	NA		16.7%	10.0%	8.6%
Total		100.0%	100.0%	100.0%	100.0%

Qualserve Performance Indicators for Water and Wastewater Utilities Pilot Survey
Approximation Summary

APPX: Total number of active accounts * Type Crosstabulation

% within Type

		Type			Total
		Water only	Wastewater only	Combined	
APPX: Total number of active accounts	Approximation		16.7%	15.0%	11.4%
	Non-approximation	88.9%	66.7%	80.0%	80.0%
	NA	11.1%	16.7%	5.0%	8.6%
Total		100.0%	100.0%	100.0%	100.0%

APPX: Total volume processed in million gallons * Type Crosstabulation

% within Type

		Type			Total
		Water only	Wastewater only	Combined	
APPX: Total volume processed in million gallons	Approximation			25.0%	14.3%
	Non-approximation	77.8%	66.7%	70.0%	71.4%
	NA	22.2%	33.3%	5.0%	14.3%
Total		100.0%	100.0%	100.0%	100.0%

APPX: Total direct operations and maintenance costs for water and/or wastewater treatment (include all supporting functions) * Type Crosstabulation

% within Type

		Type			Total
		Water only	Wastewater only	Combined	
APPX: Total direct operations and maintenance costs for water and/or wastewater treatment (include all supporting functions)	Approximation	22.2%	16.7%	20.0%	20.0%
	Non-approximation	44.4%	66.7%	75.0%	65.7%
	NA	33.3%	16.7%	5.0%	14.3%
Total		100.0%	100.0%	100.0%	100.0%

APPX: Total hours of planned maintenance undertaken by the utility and contractors working on behalf of the utility during the reporting period * Type Crosstabulation

% within Type

		Type			Total
		Water only	Wastewater only	Combined	
APPX: Total hours of planned maintenance undertaken by the utility and contractors working on behalf of the utility during the reporting period	Approximation	44.4%	16.7%	50.0%	42.9%
	Non-approximation	22.2%	66.7%	20.0%	28.6%
	NA	33.3%	16.7%	30.0%	28.6%
Total		100.0%	100.0%	100.0%	100.0%

APPX: Total hours of corrective maintenance undertaken by the utility and contractors working on behalf of the utility during the reporting period * Type Crosstabulation

% within Type

		Type			Total
		Water only	Wastewater only	Combined	
APPX: Total hours of corrective maintenance undertaken by the utility and contractors working on behalf of the utility during the reporting period	Approximation	33.3%	16.7%	50.0%	40.0%
	Non-approximation	22.2%	66.7%	20.0%	28.6%
	NA	44.4%	16.7%	30.0%	31.4%
Total		100.0%	100.0%	100.0%	100.0%

Qualserve Performance Indicators for Water and Wastewater Utilities Pilot Survey
Approximation Summary

APPX: Total cost of planned maintenance during the reporting period, including costs of contracts for planned maintenance * Type Crosstabulation

% within Type

		Type			Total
		Water only	Wastewater only	Combined	
APPX: Total cost of planned maintenance during the reporting period, including costs of contracts for planned maintenance	Approximation	55.6%	16.7%	40.0%	40.0%
	Non-approximation	22.2%	50.0%	10.0%	20.0%
	NA	22.2%	33.3%	50.0%	40.0%
Total		100.0%	100.0%	100.0%	100.0%

APPX: Total cost of corrective maintenance undertaken by the utility, including costs of contracts for corrective maintenance * Type Crosstabulation

% within Type

		Type			Total
		Water only	Wastewater only	Combined	
APPX: Total cost of corrective maintenance undertaken by the utility, including costs of contracts for corrective maintenance	Approximation	44.4%	16.7%	40.0%	37.1%
	Non-approximation	22.2%	50.0%	10.0%	20.0%
	NA	33.3%	33.3%	50.0%	42.9%
Total		100.0%	100.0%	100.0%	100.0%

APPX: Total number of sewer overflows during the reporting period * Type Crosstabulation

% within Type

		Type			Total
		Water only	Wastewater only	Combined	
APPX: Total number of sewer overflows during the reporting period	Approximation		16.7%	15.0%	11.4%
	Non-approximation		83.3%	70.0%	54.3%
	NA	100.0%		15.0%	34.3%
Total		100.0%	100.0%	100.0%	100.0%

APPX: Total miles of pipe in the utility's collection system * Type Crosstabulation

% within Type

		Type			Total
		Water only	Wastewater only	Combined	
APPX: Total miles of pipe in the utility's collection system	Approximation		16.7%	20.0%	14.3%
	Non-approximation		83.3%	65.0%	51.4%
	NA	100.0%		15.0%	34.3%
Total		100.0%	100.0%	100.0%	100.0%

APPX: Total number of collection system failures experienced during the reporting period * Type Crosstabulation

% within Type

		Type			Total
		Water only	Wastewater only	Combined	
APPX: Total number of collection system failures experienced during the reporting period	Approximation			20.0%	11.4%
	Non-approximation		83.3%	65.0%	51.4%
	NA	100.0%	16.7%	15.0%	37.1%
Total		100.0%	100.0%	100.0%	100.0%

Qualserve Performance Indicators for Water and Wastewater Utilities Pilot Survey
Approximation Summary

APPX: Total miles of collection system pipeline * Type Crosstabulation

% within Type

		Type			Total
		Water only	Wastewater only	Combined	
APPX: Total miles of collection system pipeline	Approximation		16.7%	5.0%	5.7%
	Non-approximation		83.3%	80.0%	60.0%
	NA	100.0%		15.0%	34.3%
Total		100.0%	100.0%	100.0%	100.0%

APPX: Number of operating/discharge permits issued to the utility * Type Crosstabulation

% within Type

		Type			Total
		Water only	Wastewater only	Combined	
APPX: Number of operating/discharge permits issued to the utility	Approximation			10.0%	5.7%
	Non-approximation		100.0%	85.0%	65.7%
	NA	100.0%		5.0%	28.6%
Total		100.0%	100.0%	100.0%	100.0%

APPX: Total number of standard non-compliance days at each facility * Type Crosstabulation

% within Type

		Type			Total
		Water only	Wastewater only	Combined	
APPX: Total number of standard non-compliance days at each facility	Approximation			15.0%	8.6%
	Non-approximation		83.3%	80.0%	60.0%
	NA	100.0%	16.7%	5.0%	31.4%
Total		100.0%	100.0%	100.0%	100.0%